SPECIAL TOXIC HAZARDS
Lead-Containing Materials

INTRODUCTION

Many work place materials contain Lead. Workers and building occupants overexposed to Lead could experience gastrointestinal disturbances, fatigue, aches, and conditions that are reversible. Extended exposure may result in nervous system damage, anemia, brain damage, kidney damage and reproductive system damage, conditions that may be permanent.

APPLICABLE CODES

29 CFR 1926.62	OSHA Lead in Construction Standard
IEPA Memo (3/23/93)	Information Statement on the Removal of Lead-Based Paint From Exterior Surfaces
FESHM Chapter 2060	Hazard Analysis for Fermilab Employees
EPA 40 CFR Part 745	Composite Dust Wipe Samples for Risk Assessments and Clearance Testing

SCOPE

This section applies to all construction work where an employee may be occupationally exposed to Lead. Construction work excluded from coverage from the general industry standard for Lead by 29 CFR 1910.1025(a)(2) is covered by this standard. Construction work is defined as work which involves construction, alteration and/or repair, including painting and decorating. It includes, but is not limited to:

1. Demolition or salvage of structures where Lead or materials containing Lead are present.

2. Removal or encapsulation of Lead-containing materials.

3. New construction, alteration, repair, or renovation of structures, substrates, or portions thereof that contain Lead, or materials that contain Lead.

4. Installation of products containing Lead.

5. Lead contamination/emergency clean up.

6. Transportation, disposal, storage, or containment of Lead or materials containing Lead on the site or location at which construction activities are performed, and

7. Maintenance operations associated with construction activities described in this paragraph.

DEFINITIONS

Action level (AL)	Employee exposure, without regard to the use of respirators, to an airborne concentration of Lead of 30 micrograms per cubic meter of air (30 ug/M^3) calculated as an 8-hour time-weighted average (TWA).
Competent Person	One who is capable of identifying Lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.
Composite Dust Wipe Sample	A combination of two or more individual dust wipe samples that are analyzed together to obtain a single result
Lead-Containing Material	A material that has a detectable quantity of Lead
Permissible Exposure Limit (PEL)	Employee exposure, without regard to, the use of respirators, to an airborne concentration of Lead greater than fifty micrograms per cubic meter of air (50 ug/M^3) averaged over an 8-hour period.

SPECIAL RESPONSIBILITIES

Divisions/Sections are responsible for providing or obtaining a competent person to:

1. Sample suspected Lead-based material to be modified, disturbed, or removed, in the course of construction work.

2. Determine what measures will be taken to prevent or reduce worker's exposure during the work. These measures must be reflected in the written Hazard Analysis (FESHM 2060).

3. Provide training and information to potentially exposed employees in accordance with this chapter and the Fermilab's ES&H Manual Chapter 5051.1, Hazard Communication Program.

4. Coordinate disposal of Lead-contaminated waste.

Supervisors are responsible for notifying the division/section ES&H group concerning such work.

The ES&H Section shall provide accredited laboratory services for sample analysis and technical guidance for work involving occupational exposure to Lead.

The Medical Department shall provide a medical surveillance program for employees covered by this chapter (see Medical Surveillance).

PROCEDURES

1. Lead-containing paints shall not be used. If no other substitute is feasible, exceptions may be granted by the division/section head.

2. Materials that may contain Lead must be tested or assumed to contain Lead before any construction activity is undertaken which could disturb significant quantities of the material. If any level of Lead is detected, then the following procedures must be followed.

   a. The division/section ES&H group shall be contacted and provided with a justification for the disturbance of Lead-containing materials.

   b. The division/section ES&H group shall recommend proper handling and exposure controls using the following guidelines:

      1. Exposure Assessment

      Exposure above the PEL is assumed for the following tasks unless there is air monitoring data that documents that exposure is below the PEL:

- Where Lead-containing coatings are present; manual demolition of structures, manual scraping, manual sanding, heat gun applications, and power tool cleaning with dust collection systems.

- Spray painting with Lead paint.

- Using Lead-containing mortar, Lead burning.

- Where Lead-containing coatings or paint is present; power tool cleaning without dust collection systems, clean-up activities where dry expendable abrasives are used, and abrasive blasting enclosure movement and removal.

- Abrasive blasting, welding, cutting, and torch burning.

- Moving Lead bricks (more than 10) or shielding which are not covered with paint or other barrier coating.

Personal air monitoring representative of each employee's full shift exposure to Lead shall be performed according to the frequencies listed below (or less frequent depending on the occurrence of the work activity).

RESULT	MONITORING FREQUENCY
< 30 $\mu g/m^3$	Need not be repeated for identical operation
> 30 $\mu g/m^3$ **but <** 50 $\mu g/m^3$	Every 6 months
>50 $\mu g/m^3$	Every 3 months

Note: See OSHA Standard 1926.62 for additional information on monitoring and frequency requirements.

For other tasks, the division/section ES&H group shall use their judgment to determine if employee exposure may exceed the PEL or AL. If there is reason to believe exposure may exceed the AL, then representative full shift personal air monitoring must be done according to the frequencies listed above.

2. Personal Protective Equipment

Personal protective equipment, including coveralls or similar full-body work clothing, gloves, hats, shoes or disposable shoe coverlets shall be worn when exposure may exceed the PEL.

Respiratory protection shall be worn when exposure may exceed the AL per the selection requirements outlined in 1926.62 and ES&H Manual Chapter 5103.

Contaminated protective clothing and equipment shall be collected in a labeled, closed container.

3. Housekeeping

All surfaces shall be maintained as free as practicable of accumulations of Lead. Floors and other surfaces shall be cleaned by vacuuming or other methods that minimize the likelihood of Lead becoming airborne. Where vacuuming methods are used, the vacuums shall be equipped with HEPA filters and used and emptied in a manner, which minimizes the re-entry of Lead into the workplace.

A surface is considered "clean" if the surface concentration is less than 0.05 mg/dm2.

4. Hygiene Facilities and Practices

Food and/or beverage shall not be stored or consumed and tobacco products are not present or used in areas where employees may be exposed to Lead above the AL.

Employees, who may be exposed above the AL, shall be required to wash their hands and face prior to eating, drinking, smoking, or applying cosmetics.

Change Rooms - Whenever employee exposure to Lead may exceed the PEL, employees shall not leave the workplace wearing any protective clothing or equipment that is required to be worn during the workshift. Employees shall be provided with a clean change area with separate storage facilities for protective work clothing and equipment and for street clothes that prevent cross-contamination.

Showers - Employees shall be provided and required to use shower facilities (were feasible) when their exposure to Lead may be above the PEL. Showers shall be taken at the end of the work shift or job.

Employees exposed to Lead above the PEL shall not leave the area with PPE or equipment unless surface dust has been removed by vacuuming or other cleaning method that limits dispersion of Lead dust.

Work where exposure may exceed the AL must be done by individuals who have received training (per 29 CFR1926.62), are supervised by a competent person, and are enrolled in a medical surveillance program.

5. Medical Surveillance

Initial medical surveillance is required for any employee whose exposure to Lead may exceed the AL on any one day. An initial medical surveillance consists of biological monitoring in the form of blood sample and analysis for Lead, and zinc protoporphyrin levels.

A medical surveillance program is required for all employees who may be exposed at or above the AL for more than 30 days in any consecutive 12 months.

Medical surveillance shall be performed per 29 CFR 1926.62.

6. Employee Information and Training

Employees are to receive information concerning Lead hazards according to the requirements of OSHA's Hazard Communication Standard for the construction industry, 29 CFR 1926.59, including but not limited to the requirements concerning warning signs and labels, material safety data sheets (MSDS), and employee information and training.

Employees who handle Lead and have exposures below the action level shall receive Lead Handling training (Fermilab Course # FN000123). Employees who are subject to Lead exposures at or above the action level on any day shall receive annual Lead Worker training (Fermilab Course # FN000292).

7. Signs

Areas were employee exposure to Lead is at or above the PEL shall be posted with a warning sign, which states:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

8. Observation of Monitoring

Affected employees or their designated representative shall be given the opportunity to observe any monitoring of employee exposure to Lead.

Affected employees shall receive a written copy of sampling results within 5 working days after the receipt of results.

9. Waste

Every reasonable effort shall be made to limit the release of Lead residues into air, ground, or water. To the extent practical, all Lead-contaminated residues must be contained, collected and containerized for disposal as regulated chemical waste.

All generated waste shall be disposed of per Fermilab's regulated chemical waste disposal program.

10. Clearance Sampling

In areas where lead activities have been completed, surface lead dust levels must be less than 0.05 mg/dm^2 in order to enter the area without requirements as prescribed in this Chapter.

Wait a minimum of 1 hour following lead activities for any airborne dust to settle.

Conduct visual examination of the work area:

a. Determine if all required work has been completed and all lead-based hazards have been controlled.
b. Determine sample locations

Collect clearance samples from work area:

a. Separate samples are recommended for different surface materials.
b. Areas sampled should be approximately the same size (100 cm^2).
c. A separate wipe must be used for each area sampled.
d. For characterizing lead dust surface clearance levels wipe sample results may be averaged for the same surface to determine compliance with the 0.05 mg/dm^2 standard.
e. Areas with a single surface lead result greater than 0.5 mg/dm^2 shall be re-cleaned and retested.

Areas where children may live and play shall be cleaned to current Housing and Urban Development levels. This includes but may not be limited to Fermilab Day Care facilities and Fermilab Housing. Contact the ESH Section Industrial Hygienist for further information.

SUBCONTRACTORS

Subcontractors must submit, as part of their safety and health plan, provisions for doing construction work with Lead-based materials in accordance with 29CFR1926.62.